

WHAT IS CLAIMED IS:

1. A repeater which passes on a communications packet between a first network and a second network, the repeater comprising:
 - a port mapping table where an external port number on the first network is associated with an internal IP address and an internal port number of a terminal connected to the second network;
 - a controller, which, receiving a communications packet to which the external port number is specified, converts the external port number to the internal port number based on the port mapping table and transfers the internal port number to the second network;
 - a timer, which counts an unoccupied time of a port after transfer of a communications packet with the internal port number to which is converted from the external port; and
 - a port manager, which deletes the external port number in the port mapping table when the unoccupied time of the port has reached a predetermined time.
2. The repeater according to claim 1, wherein the unoccupied time can be set by an access from a terminal connected to the second network.
3. The repeater according to claim 1, wherein the port manager

monitors the port open time, records the longest time and sets a time equal to or above the longest time as a threshold value of the unoccupied time.

4. A repeater which passes on a communications packet between a first network and a second network, the repeater comprising:

 a port mapping table where an external port number on the first network is associated with an internal IP address and an internal port number of a terminal connected to the second network;

 a controller, which, receiving a communications packet to which the external port number is specified, converts the external port number to the internal port number based on the port mapping table and transfers the internal port number to the second network;

 a timer, which counts an unoccupied time of an port after transfer of a communications packet having the internal port number to which is converted from the external port; and

 a port manager, which, determining that a communications packet has not been received for a predetermined time, transmits a presence check packet to the terminal connected to the second network and which, receiving no response, deletes the external port number in the port mapping table.

5. A repeater which passes on a communications packet between

a first network and a second network, said repeater comprising:

a port mapping table where an external port number on said first network is associated with an internal IP address and an internal port number of a terminal connected to said second network;

a controller, which, receiving a communications packet to which the external port number is specified, converts the external port number to the internal port number based on the port mapping table and transfers the internal port number to the second network;

a timer, which counts the time for periodically transmitting a presence check packet to the terminal connected to the second network; and

a port manager, which transmits a presence check packet to the terminal connected to the second network at the time counted by the timer and which, receiving no response, deletes registration the external port number from said port mapping table.

6. The repeater according to claims 1 through 5, wherein the port manager makes registration to the port mapping table based on a request made by the terminal connected to the second network.

7. The repeater according to any one of claims 1 through

6, wherein the repeater is a router which performs dynamic port forwarding of an IP packet in accordance with the UPnP Standard.

8. A repeater which passes on a communications packet between a first network and a second network, said repeater comprising:

 a port mapping table where an external port number on the first network is associated with an internal IP address and an internal port number of a terminal connected to the second network;

 a controller, which, receiving a communications packet to which the external port number is specified, converts the external port number to the internal port number based on the port mapping table and transfers the internal port number to the second network;

 a DHCP server section which checks whether to renew the lease on expiration of the DHCP lease period and receives a lease renewal request from the terminal; and

 a port manager which, receiving no lease renewal request from the terminal, deletes the external port number from the port mapping table.

9. An inter-network repeating method which passes on a communications packet between a first network and a second network, the method comprising the steps of:

 creating a port mapping table where an external port number

on the first network is associated with an internal IP address and an internal port number of a terminal connected to the second network;

receiving a communications packet to which the external port number is specified;

converting the external port number to the internal port number based on the port mapping table;

transferring the internal port number to the second network;

counting an unoccupied time of the port after transfer of a communications packet with the internal port number to which is converted from the external port; and

deleting the external port number from the port mapping table when the unoccupied time of the port has reached a predetermined time.

10. The inter-network repeating method according to claim 9, wherein the method further comprises the step of:

setting, by the user, the unoccupied time by an access from a terminal connected to the second network.

11. The inter-network repeating method according to claim 9, wherein the method further comprising the step of:

monitoring the port open time, recording the longest time and setting a time equal to or above the longest time as a threshold

a value of the unoccupied time.

12. An inter-network repeating method which passes on a communications packet between a first network and a second network, the method comprising steps of:

creating a port mapping table where an external port number on the first network is associated with an internal IP address and an internal port number of a terminal connected to the second network;

receiving a communications packet to which the external port number is specified, converting the external port number to the internal port number based on the port mapping table and transferring the internal port number to the second network;

counting the unoccupied time of the port after transfer of a communications packet with the internal port number to which is converted from the external port; and

determining that a communications packet has not been received for a predetermined time, transmitting a presence check packet to the terminal connected to the second network and, receiving no response, deleting the external port number in the port mapping table.

13. An inter-network repeating method which passes on a communications packet between a first network and a second network, the method comprising steps of:

creating a port mapping table where an external port number on said first network is associated with an internal IP address and an internal port number of a terminal connected to the second network;

receiving a communications packet to which the external port number is specified, converting the external port number to the internal port number based on the port mapping table and transferring the internal port number to the second network;

counting the time for periodically transmitting a presence check packet to the terminal connected to the second network; and

transmitting a presence check packet to the terminal connected to the second network at the time counted and, receiving no response, deleting the external port number from the port mapping table.

14. The inter-network repeating method according to any one of claims 9 through 13, wherein the method further comprises the steps of:

making registration to the port mapping table based on a request made by the terminal connected to the second network.

15. An inter-network repeating method which passes on a communications packet between a first network and a second network, the method comprising steps of:

creating a port mapping table where an external port number on the first network is associated with the internal IP address and the internal port number of a terminal connected to the second network;

receiving a communications packet to which the external port number is specified, converting the external port number to said internal port number based on the port mapping table and transferring the internal port number to the second network;

checking whether to renew the lease on expiration of the DHCP lease period and receiving a lease renewal request from said terminal; and

receiving no lease renewal request from the terminal and deleting registration concerning said external port number from said port mapping table.